

Knowledge and Practices of Postnatal Mothers Regarding Prevention of Puerperal Sepsis

Rabab Hassan Mohammed Hassan, Hoda Abd el Azim Mohamed, Dr. Hanaa Abd Elhady solimen

1. * (B.Sc. in Nursing)
2. ** Professor of Women Health and Obstetric Nursing Faculty of Nursing - Minia University
3. *** Lecturer of Women Health & Obstetric Nursing

Abstract

Background. Puerperal sepsis is infection of the genital tract occurring at any time between the onset of rupture of membranes or labor and the 42 day postpartum. It's one of the fifth common causes of maternal mortality worldwide. **The aim of this study** is To assess Knowledge and practices of postnatal mothers regarding prevention of puerperal sepsis . **Research Design:** A descriptive cross sectional research design. **Subject:** Purposive samples composed of (87) postnatal mothers from Minia University Hospital for obstetric and pediatric at postnatal department. **Tools of data collection:** include - A structured interview questionnaire, knowledge assessment tool and practical assessment tool. **Results:** the study revealed that (87.4%) of the studied women had unsatisfactory knowledge level regarding puerperal sepsis and (74.7%) of the studied sample had poor practice about prevention of puerperal sepsis. There is positive association between total knowledge score and total practices level (p. value < .0001) **Conclusion:** The study concluded that majority of postnatal mothers had poor level of knowledge regarding puerperal sepsis , and around three quarters of them had poor practice about prevention of puerperal sepsis. A positive fair association was found between knowledge and practice scores regarding prevention of puerperal sepsis. **Recommendation:** - The obstetric nurse could play and implement their role as health educator, counselor, coordinator, and supervisor and help post natal mothers to improve their knowledge and practices regarding puerperal sepsis and its prevention. **Keywords:** postnatal period, puerperal sepsis.

Introduction

Puerperal sepsis is infection of the genital tract occurring at the period between the rupture of membranes or labor, and the 42 days of postpartum. puerperal sepsis can cause long-term health problems such as chronic pelvic inflammatory disease (PID) and infertility. Puerperal sepsis is the fourth common cause of maternal mortality after postpartum bleeding, unsafe abortion and hypertensive disorder of pregnancy. It causes about 8% of maternal deaths Globally 6 million had developed puerperal sepsis and around 77,000 mothers died of it. (Atlaw& Seyoum, 2019). puerperal sepsis, divided to local infection as rise of temperature, malaise, headache, redness and swelling of episiotomy, pus formation in the episiotomy, and uterine infection as rise of temperature with chills and rigor, rapid pulse, copious and offensive lochia discharge, subinvolution of uterus, breathlessness abdominal pain and dysuria and spreading infection (sepsis) as parametritis, pelvic peritonitis, and pelvic abscess (Kaur, 2019). The most effective and least expensive treatment of postpartum infection is prevention. Preventive measures include, good prenatal nutrition to control anemia and intrapartum hemorrhage. Good maternal perineal hygiene with thorough hand washing is emphasized. Nurses in birth centers and hospital settings must be able to identify women at risk for postpartum infection and to provide anticipatory teaching and counseling before discharge. After discharge, telephone follow-up, hot lines, support groups, lactation counselors, home visits by nurses, and teaching materials (videos, written materials) are all interventions that can be implemented to prevent or increase recognition of postpartum infections (Lowdermilk, et al.,2016).

Significance of the study :

World Health Organization (WHO) estimated that about 350,000 maternal deaths occur during labor and childbirth of which 15% were associated with puerperal sepsis. Puerperal sepsis causes at least 75,000 maternal deaths every year and mostly occurs in low-income countries with a distribution of 11.6% in Asia, 9.7% in Africa, 7.7% in Latin America and the Caribbean compared to the 2.1% in developed countries (WHO, 2016). In Nigeria, puerperal sepsis accounted for 12% of maternal deaths In Ethiopia, puerperal sepsis accounted for about 13% of all maternal deaths and became one of the top four causes of mortality (Admas, et., al. 2020). postnatal infection is the fourth direct leading cause of death in Egypt, according to a recent study in Upper Egypt done by Masoud and Saber , (2016) Effectiveness of Puerperal Sepsis Self-Care Guideline on Women's Health during Pueriperium concluded that puerperal sepsis was 2% among studied sample (Masoud & Saber, 2016).

Subjects and Methods

Aim of this study

This study aimed to assess the knowledge and practices of postnatal mothers regarding the prevention of puerperal sepsis.

Research Questions

- What are the knowledge of postnatal mothers about puerperal sepsis?.
- What are the practices of postnatal mothers about puerperal sepsis?.
- Is their are association between knowledge and practices of postnatal mothers regarding puerperal sepsis?.

Research Design

A descriptive cross-sectional research design was utilized to fulfill the aim of this study.

Setting

The study was conducted at the postnatal department of obstetric and Pediatric (MUHOP) during the first day of postpartum period .

Sample:

A purposive sample composed of 87 postnatal mothers participated in the current study according to following criteria.

Sample technique:

$$N = \frac{t^2 \times p(1-p)}{m^2}$$

$$N = \frac{(1.96)^2 \times 0.07(1-0.07)}{0.05^2}$$

N = 87 women

Description:

- N = required sample size.
- t = Confidence level at 95 % (standard value of 1.960).
- p = Prevalence of (0.07).
- m = Margin of error at 5 % (standard value of 0.050).

Inclusion Criteria:

- Postnatal mothers who were inpatient word during the first day of postpartum.
- Postnatal mothers who were free from any infection.
- Who delivered normally.
- Willing to participate in the study.

Exclusion Criteria

- Who delivered the cesarean section?
- Women with chronic disease.

Tools for Data Collection

To achieve the goal of the study, data was collected through using three tools designed by the researcher after reviewing the related literature.

Tool I: A structured interview questionnaire, it consisted of two parts (Chepchirchir, et al., 2017).

Part (one): Socio-demographic characteristics such as (age, residence, educational level, occupation, income, and the source of women's knowledge about puerperal sepsis).

Part (two): this part involved obstetric history such as (gravidity, parity, and multiple pregnancies, methods of current delivery, number of living children).

Tool II: knowledge assessment tool: it used to assess women's knowledge regarding puerperal sepsis included (14) items in the form of closed questions related to the normal postpartum period (definition, duration and changes of postpartum period) and concept of puerperal sepsis (definition, risk factors, signs and symptoms, complication, prevention and it's management).

Scoring system of women's knowledge

The mother's answers related to knowledge regarding puerperal sepsis include (14) items were scored and calculated. A scoring for mothers' knowledge was consisted of given (2) for complete correct answer, (1) for incomplete correct answer and (0) for incorrect answer or for any woman who didn't know the answer. These scores were converted into a percent score, A score was given to each question and the total knowledge score was range from (0%) to point score knowledge below 60% classified as unsatisfactory and mother's had 60% and more was described as satisfactory knowledge.

Tool III: Practical Assessment Tool: it used to assess postnatal mother's practices regarding prevention of puerperal sepsis involved (24) items as (maintain a healthy hemoglobin level, ensure a balanced diet, have plenty of fluid intakes, maintain good hygienic care especially around perineum, keep the area dry, ventilated and clean, monitor vital parameters such as pulse and body temperature, wash hands before and after using bathroom, perform perineal care from front to back.....etc.) (Sultana et al., 2018).

Scoring System for postnatal mother's practices

The done practice was scored as (One) while not done practice was scored as (Zero). The total practice scores were 24 scores; these scores were converted into a percent score. The total score of mother's practices was classified as follows: mothers were considered good practices when the total score was 60% and more .poor practices when the total score is less than 60%.

Validity and Reliability

The tool was tested for content validity by a jury of five experts in the field of Obstetrics and Gynecological nursing staff and nursing professor who reviewed the instruments for clarity, relevance, comprehensiveness, understanding, applicability, and easiness, to establish the reliability and statistically done Alpha Cronbach way to check the stability of the internal consistency of the instrument was .781 and 0.810 respectively.

Pilot Study:

After developing the tools, a pilot study was conducted on 10% (9 women) of cases to test the feasibility and applicability of the tools used in the current study for data collection as well as to determine the time required to be applied and modifications were done of some items of the questionnaire and the woman who were tested in the pilot study weren't included in study sample.

Data collection procedure:

An official letter was requested from the Dean of the faculty of Nursing at Minia University to the director of Minia University Hospital for Obstetric and Pediatric (MUHOP) asking for permission to collect data. Meeting with selected place managers to explain the objectives and aims of the study who helped to gain their cooperation and allow meeting the postpartum women.

The investigator was attending to the selected hospital to collect the data from 8.30 AM to 1.30 PM on two days each week (Saturday and Sunday) for three months. The investigator was collect data from inpatient words during the first day of postpartum from 5 to 8 women each week .

All women were informed that their participation is voluntary and reassurance was given to the women about the confidentiality of their responses. The investigator explained the aim and nature of the study briefly through direct personal communication that it took time from 20-30 minutes with the participants. Oral consent was obtained from the participants before inclusion in the study.

After that, the investigator filled the questionnaires from women who participated in the study. The investigator assesses woman's knowledge and practices through asking all questions that present in questionnaires (tool II, III). The time consumed for completing the questionnaires was ranged from 30-45 minutes. The duration of data collection was started from the first of July 2020 to the end of September 2020. At the end of data collection, the investigator gave women advice and instructions about how to prevent puerperal sepsis.

Ethical Consideration:

Written initial approval was obtained from the dean of the Faculty of Nursing and the research ethics committee of

the Faculty of Nursing, Minia University. Oral informed consent was obtained from women who participated in this study. Each assessment sheet was coded and postnatal women's names did not appear on the sheets for anonymity and confidentiality.

Statistical Design:

Data entry was done using a compatible personal computer. Statistical analysis was done by using the statistical package of social science (SPSS, IBM) version 25. The content of each tool was analyzed, categorized, and then coded. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables. Graphs were done for data visualization using Microsoft Excel. Statistical significance was used at P-value <0.05. Chi-square/ or fisher exact test was used to detect the relation between the demographic characteristic of postnatal women with their knowledge and practices. Pearson correlation tests were used between quantitative data.

Results:

Part I: Socio-demographic characteristics and obstetric history among studied sample

Table (1): Frequency distribution of the studied sample regarding to their socio-demographic characteristics (n= 87)

Items	No.	%
Age / years		
18- <23	19	21.8
23- <28	11	12.6
28 - <33	27	31.1
33- <38	23	26.4
≥38	7	8.1
Mean ± SD	29.3 ± 5.14 years	
Residence		
Urban	25	28.7
Rural	62	71.3
Education level		
Illiterate	31	35.6
Basic education	18	20.8
Secondary education	27	31.0
University education	11	12.6
Occupation		
Work	14	16.1
Housewives	73	83.9

Table (1): shows that 31.1% of the studied sample aged ranged between 28 – 33 years with mean age 29.3 ± 5.14 years, 71.3% of them lives in rural area, 35.6% of them illiterate, and 83.9% of them were housewives.

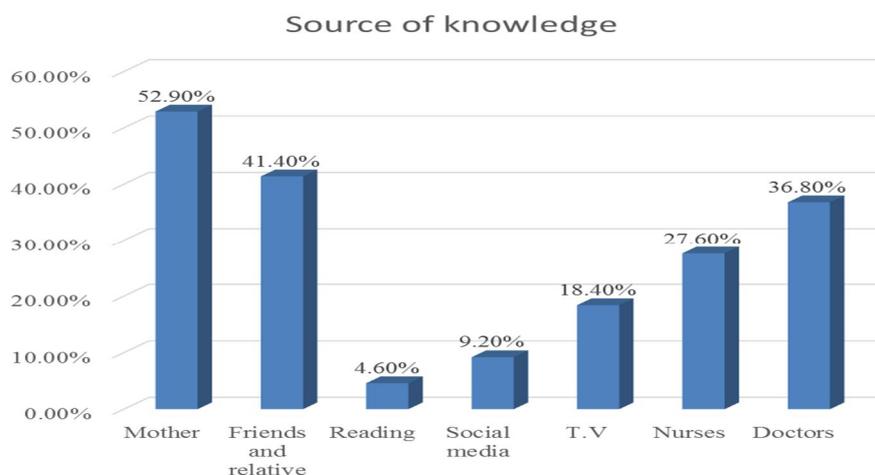


Figure (1): Percentage distribution of the studied sample regarding to their sources of knowledge (n = 87)

Figure (1): illustrates that 52.9% of the studied women their source of knowledge was their mothers, followed by 41.4% of them was their friends and relative, 36.8% of them was their physician, 27.6% of them was nurses and 18.4%, 9.2% , and 4.6% were television, social media and reading respectively.

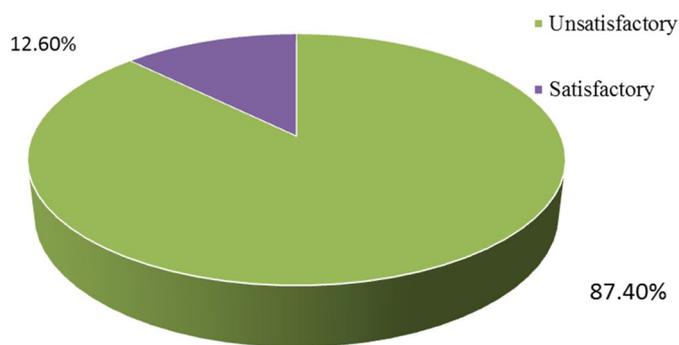


Figure (2): Percentage distribution of the studied sample regarding to their total knowledge levels about puerperal sepsis (n = 87).

Figure (2): illustrates that 87.4% of the studied women had unsatisfactory knowledge level and 12.6% of them had satisfactory knowledge level regarding prevention of puerperal sepsis.



Figure (3): Percentage distribution of the studied sample regarding to their total practice levels about puerperal sepsis (n = 87).

figure (3): illustrates that 74.7% of the studied sample had poor practice about prevention of puerperal sepsis and 25.3% of them had good practice regarding it.

Table (2): Relation between total knowledge level of the studied sample with their total practices' levels about puerperal sepsis (n = 87).

Total practice levels	Knowledge level				Fisher	P- value
	Unsatisfactory (n= 76)		Satisfactory (n = 11)			
	No.	%	No.	%		
Poor	61	80.3	4	36.4	9.802	.002**
Good	15	19.7	7	63.6		

**statistically significance differences at < .01

Table (2): reveals that 80.3% of the studied sample have unsatisfactory knowledge had poor practice level to prevent puerperal sepsis and 63.6% of them who had satisfactory knowledge had good practices with highly statistically significance differences P – value < .002.

Table (3): Correlation matrix between studied sample age, educational level, total practice score, and total knowledge scores (n = 87).

Items		Age	Educational level	Total practice	Total knowledge
Age	r				
	P - value				
Educational level	r	.000			
	P - value	.999**			

Items		Age	Educational level	Total practice	Total knowledge
Total practice	r	.141	.290		
	P - value	.192	.006**		
Total knowledge	r	.317	.386	.431	
	P - value	.003**	.0001**	.0001**	

** Correlation is significant at the 0.01 level (2-tailed).

Table (3): presents that positive fair association between studied sample age with their total knowledge score ($r=.317$ & P – value $< .003$), educational level with their total knowledge and practice scores ($r=.290$ & P – value $< .006$; $r=.386$ & P – value $< .0001$ respectively), and their total practice level with their total knowledge score ($r=.431$ & P – value $< .0001$).

Discussion

Puerperal sepsis is a common pregnancy-related condition that could eventually lead to obstetric shock or even death in some cases. In developing world, it has been reported that, puerperal sepsis is the second most cause of maternal mortality. Maternal mortality cases have not declined in spite of efforts by both sectors (public and private) to prevent such deaths. Puerperal sepsis is a serious type of septicemia contracted by women during or soon after child birth, miscarriage or unsafe abortion (**Khanna & Selvam, 2020**).

Regarding the Socio-demographic characteristics, the current study showed that slightly less than one third of the studied sample aged ranged between 28 – 33 years with mean age 29.3 ± 5.14 years, less than three quarter of them lives in rural area, more than one third of them illiterate, and the most of were housewives. That may due to this age group is the reproductive age and most of the participant were house wife so that they has more space time to take care of more children.

This result comes in the line with (**Sultana, et al., 2018**) who studied "Knowledge and practice regarding prevention of puerperal sepsis among postpartum women attending a private hospital in Bangladesh" and reported that above half of the study participants were in the age group 19-29 years, followed by more than one third in age group 30-40 years and the mean age of the participants was 29.6 ± 15.9 years and Above three-fifths were housewives; followed by less than one fifth service holders, daily laborers, and the remaining were doing business (8.7%).

In addition this result were confirmed by (**Gamel, et al., 2020**), who investigated the impact of puerperal sepsis self-care nursing guidelines on women's knowledge and practice among primiparous postnatal mothers" carried out at the postpartum unit of Fayoum General and University Hospitals on 100 primiparous women and reported that more than half of the studied women aged between twenty to thirty years and the majority of participants were housewives

Also this result supported by (**Masoud & Saber, 2016**) who assessed knowledge and practice of postnatal mothers toward prevention of puerperal sepsis, and evaluate the effectiveness of self-care guideline on postnatal mothers at the Beni-Suef general hospital and reported that around two thirds of the study women aged between twenty to thirty years. Nearly, one third of study women were illiterate. But the current study differ with the same author in reporting that the majority of the study participants had senior secondary certificate, followed by higher secondary certificate and the most of the study participants were living in urban areas, followed by about less than one quarter who were living in slum area and the rest were living in rural area.

This result come inconsistent with (**Sarkar, et al., 2019**) who assessed the knowledge and practices regarding prevention of puerperal infection among postnatal mothers in civil hospital, panipat, haryana" and reported that according to age of the postnatal mothers shows that most of postnatal mothers were in the age group of ≤ 20 years, followed by less

than one third of them were in age group 21 – 25, the most of postnatal mothers were with primary education that was followed by metric more than one fifth, the majority of postnatal mothers were from the urban area and only more than one third belongs to rural area. But the current study come in accordance with same author in reporting that maximum of postnatal mothers were housewives. That may due to most of postnatal mothers were in age group of ≤ 20 years because most of them were primary education.

As regarding the sources of knowledge, the current study: illustrated that more than half of the studied women their source of knowledge was their mothers, followed by less than half of them was their friends and relative, more than one third of them was their physician. This may be due to that the mothers are the most one who had good relationship with their girls and she act to transfer his knowledge and practices to her daughter.

This result partial agree with (**Kumar et al., 2019**) who studied "a study to assess the knowledge of postnatal mothers regarding prevention of puerperal complications in selected hospital at Chinakakani, Guntur (Dt), Andhra Pradesh" and reported that the Postnatal mothers had knowledge through Television, health personnel, newspaper and through other.

This results come in the line with (**Gamel et al., 2020**) who studied " impact of puerperal sepsis self-care nursing guideline on women's knowledge and practices " and reported that more than half of studied women had their information from the health personnel followed by friends and relatives.

As regarding to their total knowledge levels about puerperal sepsis, the present study illustrated that the most of the studied women had unsatisfactory knowledge level and the minority of them had satisfactory knowledge level regarding puerperal sepsis. This result go with (**Sultana et al., 2018**) who reported that that most of the study participant mothers had poor level of knowledge regarding prevention of puerperal sepsis. Also (**Missiriya, 2016**) assessed " Knowledge and Practice of Postnatal Mothers Regarding Personal Hygiene and Newborn Care at the rural areas of Nenum village in Thiruvellore district at Thandalam, India. " and reported that the most of postnatal mothers were having inadequate knowledge.

This result come inconsistent with (**Belagavi et al., 2015**) who studied "Knowledge regarding puerperal sepsis and its prevention among postnatal mothers in selected hospitals of Bhavnagar, India " and reported that revealed that majority of mothers in pre-test of experimental group were having average knowledge. That may due to the sample comprised of (60) postnatal mothers who were diagnosed with puerperal sepsis in sir. T hospital of Bhavnagar city. Also this result was confirmed by (**Indra, 2015**) who studied "A Study to Assess the Knowledge and Practice on Prevention of Puerperal Sepsis among Postnatal Mothers in Selected Hospital, and reported

that the studied mother had moderate knowledge regarding puerperal sepsis.

Concerning the total practice levels about prevention of puerperal sepsis, the present study illustrated that around three quarter of the studied sample had poor practice about prevention of puerperal sepsis and slightly more than one quarter of them had good practice regarding it. This may be due to unsatisfactory knowledge among studied women.

This result come in the line with (Sarkar et al., 2019) who reported that more than half of postnatal mothers had unsatisfactory practices. Also this result was supported by (Rani, 2018) who reported that majority of mothers had unsatisfactory practices. In addition this result come in accordance with (Lalitha, 2016) who stated that the practices of the studied mothers were inadequate. Moreover (Missiriya, 2016) stated that the most of the postnatal mother had unsatisfying practices regarding hygienic care. This result come inconsistent with (Sultana et al., 2018) who reported that had satisfactory practice level about prevention of puerperal sepsis.

Also result come inconsistent with (Indra, 2015) who reported that the mothers had adequate practices. In addition the current study come away from with (Gamel et al., 2020) who mentioned that that nearly more than half (59.0%) of the study sample were always commitment with the guidelines to protect themselves against puerperal sepsis. That may due to majority of this sample had follow up and maximum number of visits during pregnancy.

Regarding the relation between total knowledge level of the studied sample with their total practices' levels about puerperal sepsis, the current study revealed that the most of the studied sample who have unsatisfactory knowledge had poor practice level about prevention of puerperal sepsis and less than two third of them who had satisfactory knowledge had good practices with highly statistically significance differences $P - \text{value} < .002$. Hence, it was concluded that knowledge and practice affect each other positively regarding prevention of infection in early puerperium. As knowledge increased, safe practice also increases.

This result come in the line with (Indra, 2015) revealed that there is zero correlation existing between the knowledge and practice scores. Also this result was confirmed by (Rani, 2018) who reported that there was a strong positive correlation ($r = +0.88$) between score of knowledge and practice regarding prevention of infection in early Puerperium.

Regarding the correlation matrix between studied sample age, educational level, total practice score, and total knowledge scores, the present study showed that positive fair association between studied sample age, educational level and practice scores with their total knowledge score in addition positive correlation between women's total practice with their total knowledge score. This result partial agree with (Gamel et al., 2020), who reported that there were negative associations between women's age and residences and their total knowledge score. Moreover, positive associations between women's educational level and their total knowledge score. This may due to that educated women had a good level of knowledge.

Conclusion Based on the results of the present study, it can be concluded that the study concluded that majority of postnatal mothers had poor level of knowledge regarding puerperal

sepsis, and around three quarters of them had poor practice about prevention of puerperal sepsis.

Recommendations

Based on results of the present study the following can be recommended:

- Continuing education of the nurses who work in obstetrics and gynecological areas must be updated with the necessary knowledge about puerperal sepsis and its prevention...
- Puerperal sepsis guidelines can be introduced to the women antenatal and then it can be used postnatal.
- The obstetric nurse could play and implement their role as health educator, counselor, coordinator, and supervisor and help post natal mothers to improve their knowledge regarding puerperal sepsis and its prevention.

Future research

- The study can be replicated on a larger sample in different settings.
- This emphasizes the need for appropriate health education packages for the postnatal mothers to improve their knowledge and making them to adopt the right practices related to child birth and maternal care.

References

- (1) Admas, A., Gelaw, B., Worku, A., & Melese, A. (2020). Proportion of bacterial isolates, their antimicrobial susceptibility profile and factors associated with puerperal sepsis among post-partum/aborted women at a referral Hospital in Bahir Dar, Northwest Ethiopia. *Antimicrobial Resistance & Infection Control*, 9(1), 1-10.
- (2) Atlaw, D., & Seyoum, K. (2019). Puerperal sepsis and its associated factors among mothers in University of Gondar referral hospital, Ethiopia, 2017. *Int J Pregn & Chi Birth*, 5(5), 190-195.
- (3) Belagavi, P., Hetal, S., & Payal, B. (2015). Knowledge regarding puerperal sepsis and its prevention among postnatal mothers in selected hospitals of Bhavnagar. *Journal of International Academic Research For Multidisciplinary*, 3(4), 29-34.
- (4) Chepchirchir, M. V., Nyamari, J., & Keraka, M. (2017). Associated factors with puerperal Sepsis among reproductive age women in Nandi County, Kenya. *Journal of Midwifery and Reproductive Health*, 5(4), 1032-1040.
- (5) Gamel, W., Genedy, A., & Hassan, H. (2020). Impact of puerperal sepsis self-care nursing guideline on women's knowledge and practices. *American Journal of Nursing Research*, 8(2), 132-141.
- (6) Indra, V. (2015). A Study to Assess the Knowledge and Practice on Prevention of Puerperal Sepsis among Postnatal Mothers in Selected Hospital, Puducherry with a View to Develop an Information Booklet. *International Journal of Nursing Education and Research*, 3(4), 410-418.
- (7) Kaur, S. (2019). Management of complications of puerperum: Text book of midwifery & Gynecological nursing. (1st ed). New delhi : satish kumar jain and produced by varun jainfor cbc publishers & distributors pvt ltd. (pp. 358).
- (8) Khanna, P., & Selvam, V. (2020). Obstetric and Gynecological Infections Infectious Diseases in the Intensive Care Unit (pp. 139-148): Springer.
- (9) Kumar, H. P., Sri, C. S., & Meena, J. M. (2019). A Study to Assess the Knowledge of Postnatal Mothers Regarding Prevention of Puerperal Complications in Selected Hospital

- at Chinakakani, Guntur (Dt), Andhra Pradesh. *International Journal of Nursing Education*, 11(4), 83-86.
- (10) Lalitha, H. (2016). A study to assess the knowledge on self care during post natal period among primipara mothers in a selected maternity hospital. *International Journal of Applied Research*, 2(4), 711-712.
- (11) Lowdermilk, D. L., Perry, S. E., Cashion, M. C., & Alden, K. R. (2016). *Postpartum complications: Maternity and Women's Health Care-E-Book*. (11th ed.). Chicago: Elsevier Health Sciences. (pp. 814).
- (12) Masoud, A. O., & Saber, N. (2016). Effectiveness of Puerperal Sepsis Self-Care Guideline on Women's Health during Puerperium. *Journal of Nursing and Health Science: IOSR-JNHS*, 5(6), 1-6
- (13) Missiriya, S. (2016). Knowledge and practice of postnatal mothers regarding personal hygiene and newborn care. *International Journal of Pharmaceutical Sciences*, 40(1), 89-93.
- (14) Rani, K. (2018). A Study to Assess the Knowledge and Practice of Postnatal Mothers on Prevention of Infections in Early Puerperium. *Hindu*, 49, 61.25.
- (15) Sarkar, R., Ahalawat, S., & Kumari, M. (2019). A Descriptive Study to Assess the Knowledge and Practices Regarding Prevention of Puerperal Infection among Postnatal Mothers in Civil Hospital, Panipat, Haryana. *International Journal of Nursing Education*, 11(4), 102-107.
- (16) Sultana, S., Methe, F. Z., Muhammad, F., & Chowdhury, A. (2018). Knowledge and practice regarding prevention of puerperal sepsis among postpartum women attending a private hospital in Bangladesh. *International Journal of Research in Medical Sciences*, 6(10), 3264.
- (17) World Health Organization. (2016). WHO recommendations for prevention and treatment of maternal peripartum infection. World Health Organization.